TT4089

10047180 - 013502

FIGURE 1

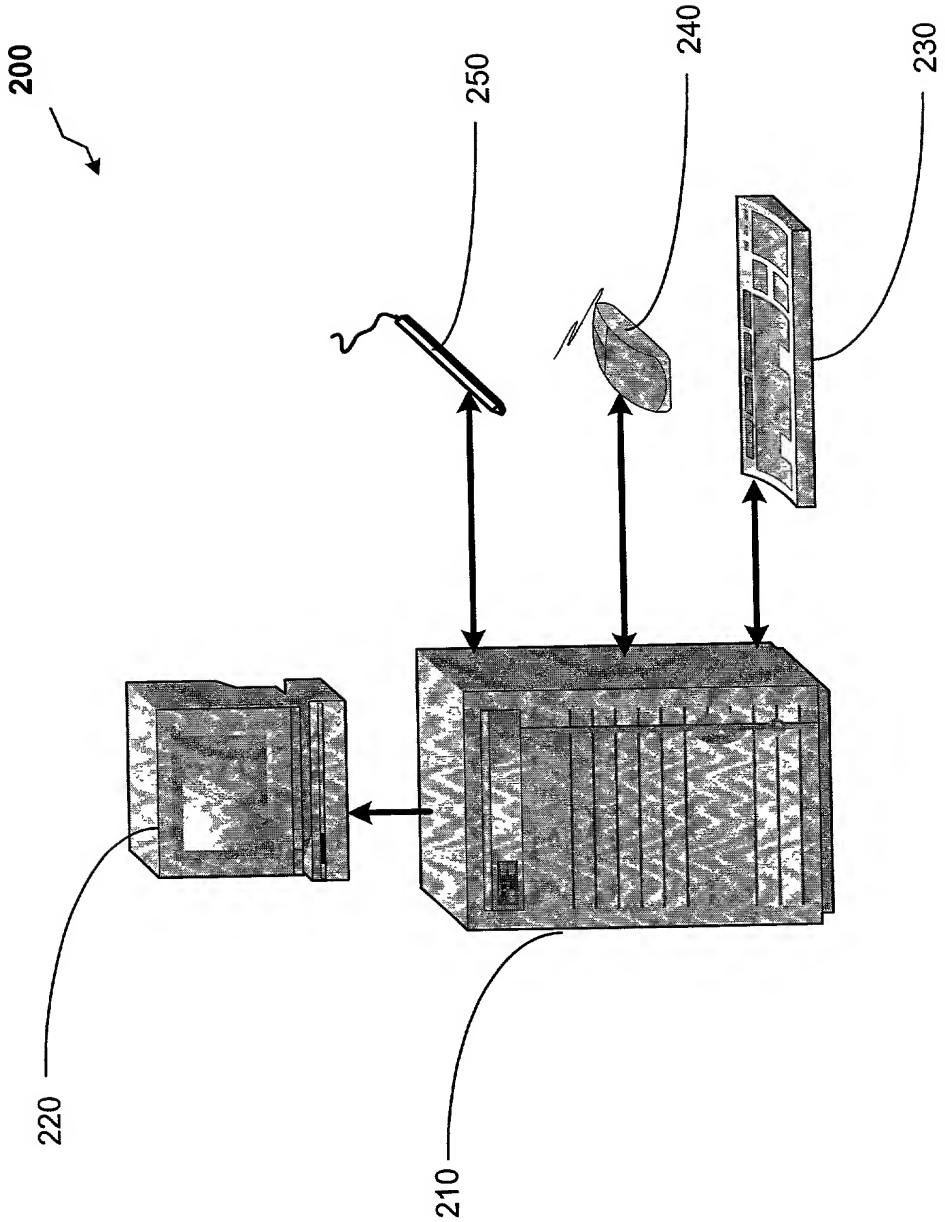

FIGURE 2

20070808 861754DOT

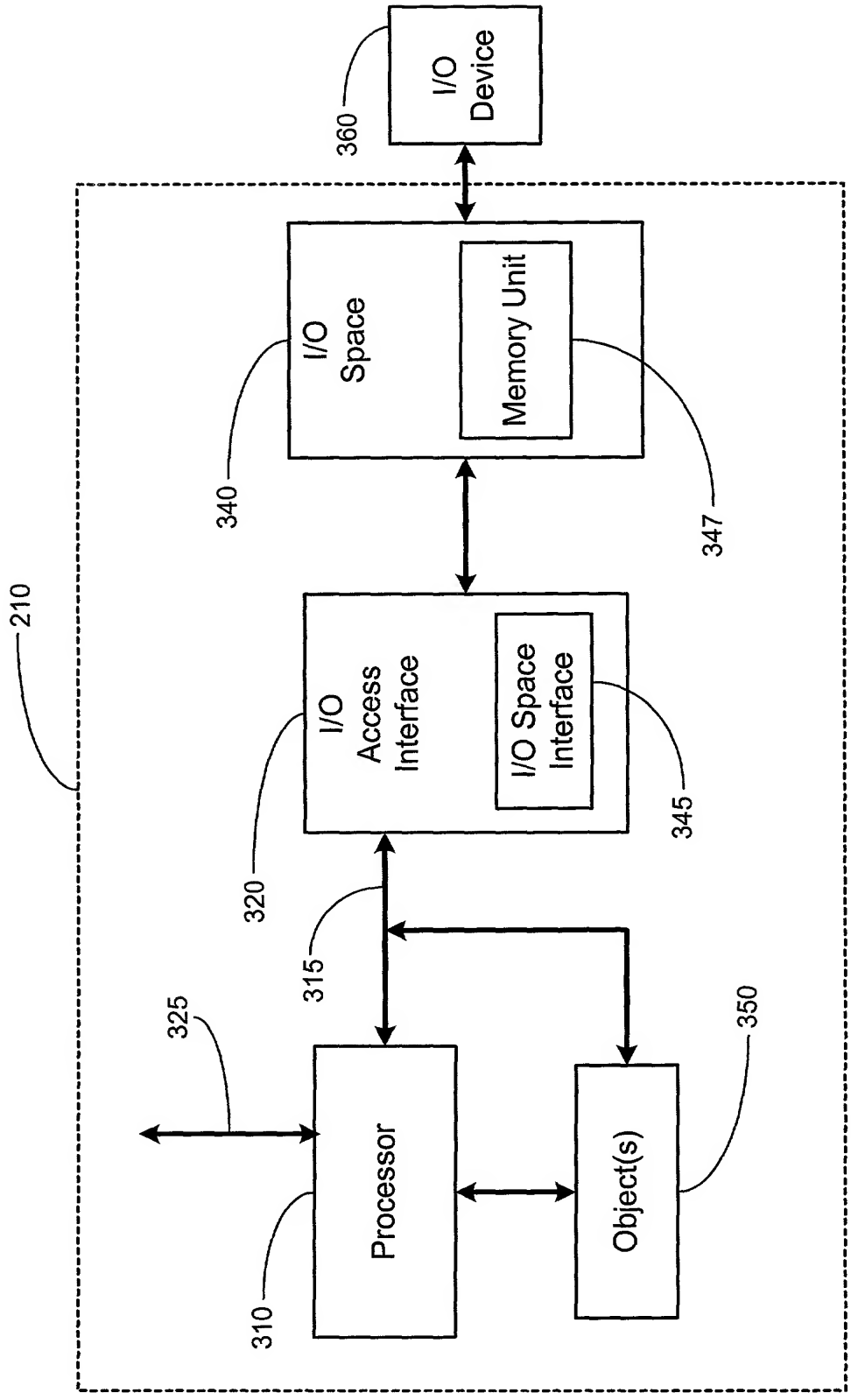

FIGURE 3

20070604/0047

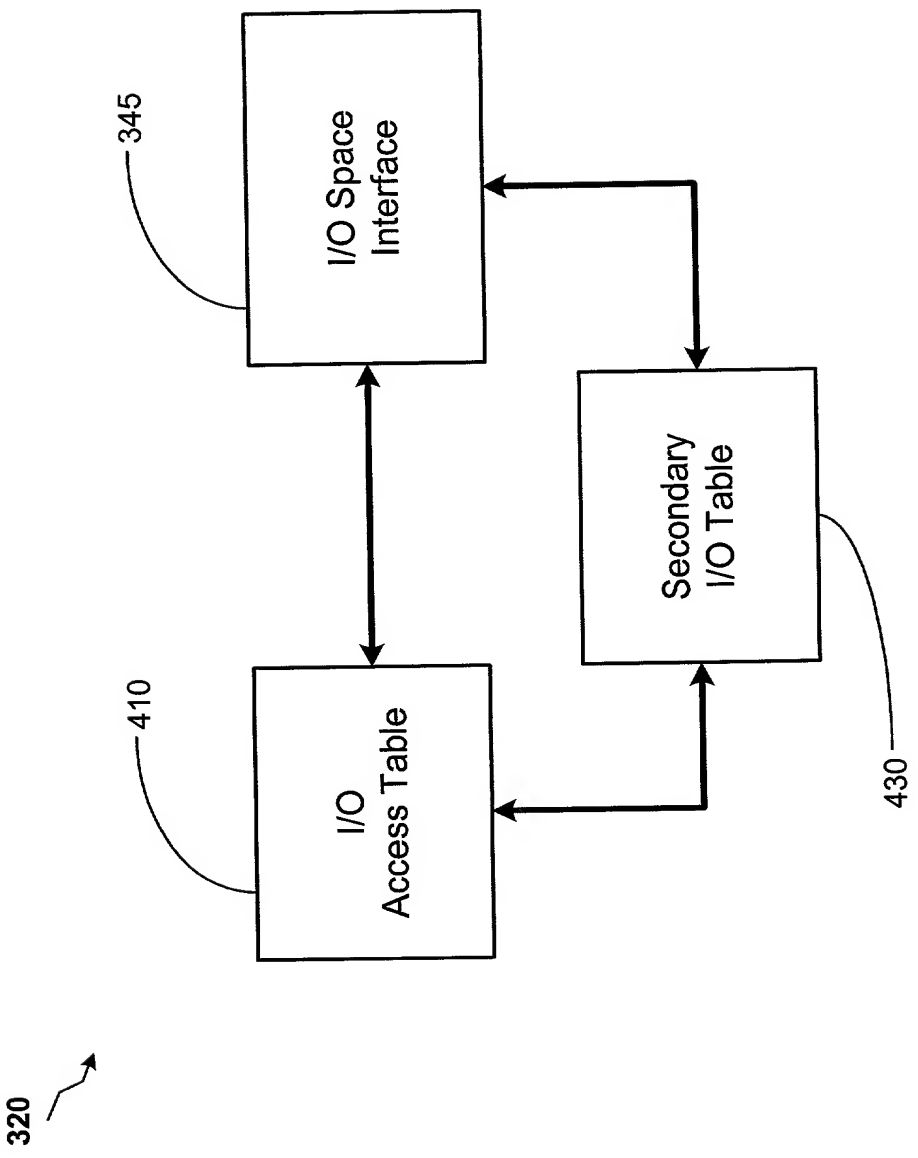
320
345
I/O Space Interface
410
I/O Access Table
Secondary I/O Table
430

FIGURE 4

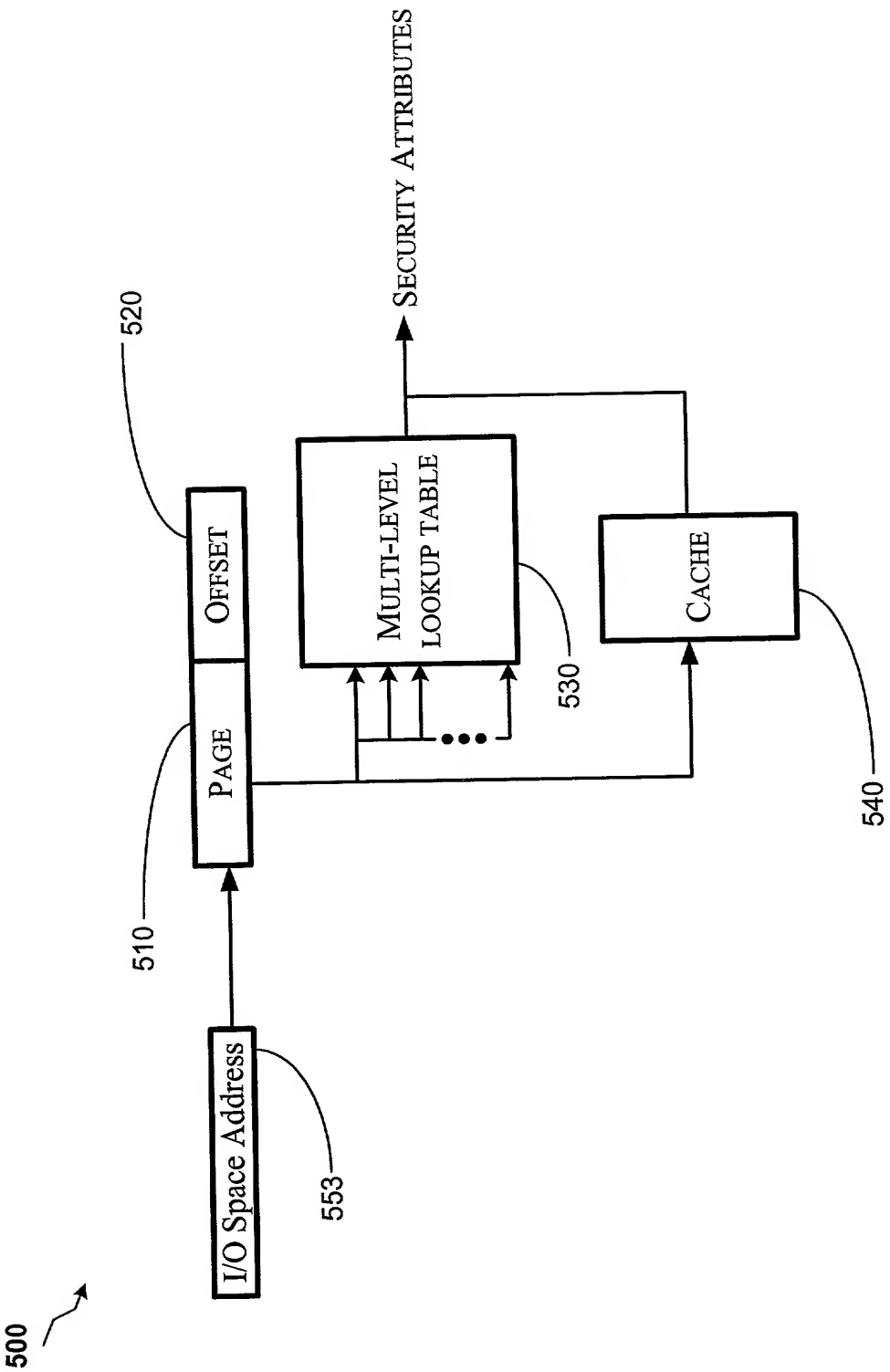
500
I/O Space Address
553
510
PAGE
OFFSET
520
MULTI-LEVEL LOOKUP TABLE
530
CACHE
540
SECURITY ATTRIBUTES

FIGURE 5A

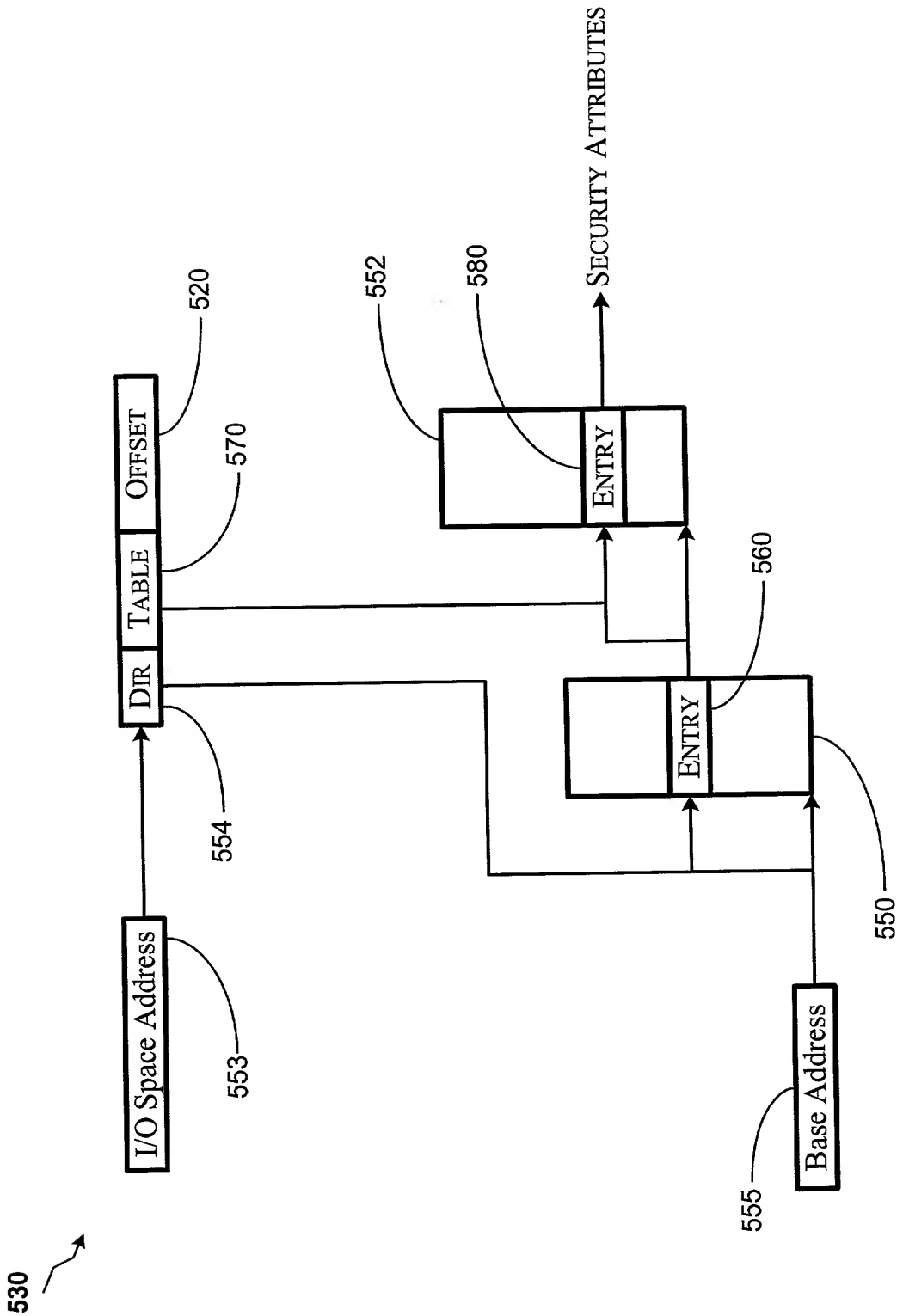
530
I/O Space Address
553
DIR
TABLE
OFFSET
520
570
554
552
580
ENTRY
SECURITY ATTRIBUTES
560
ENTRY
550
555
Base Address

FIGURE 5B

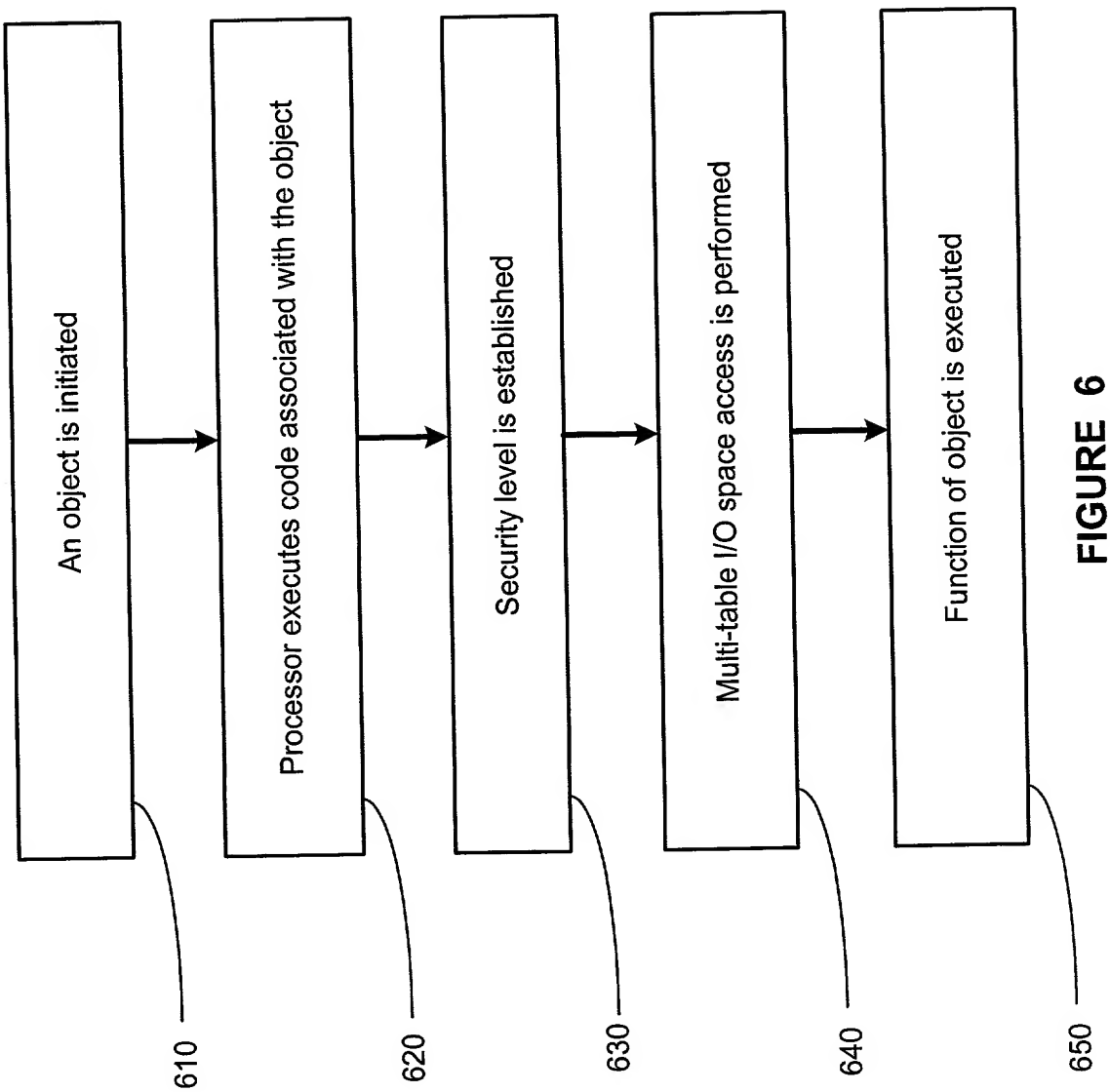
An object is initiated
Processor executes code associated with the object
Security level is established
Multi-table I/O space access is performed
Function of object is executed
610
620
630
640
650

FIGURE 6

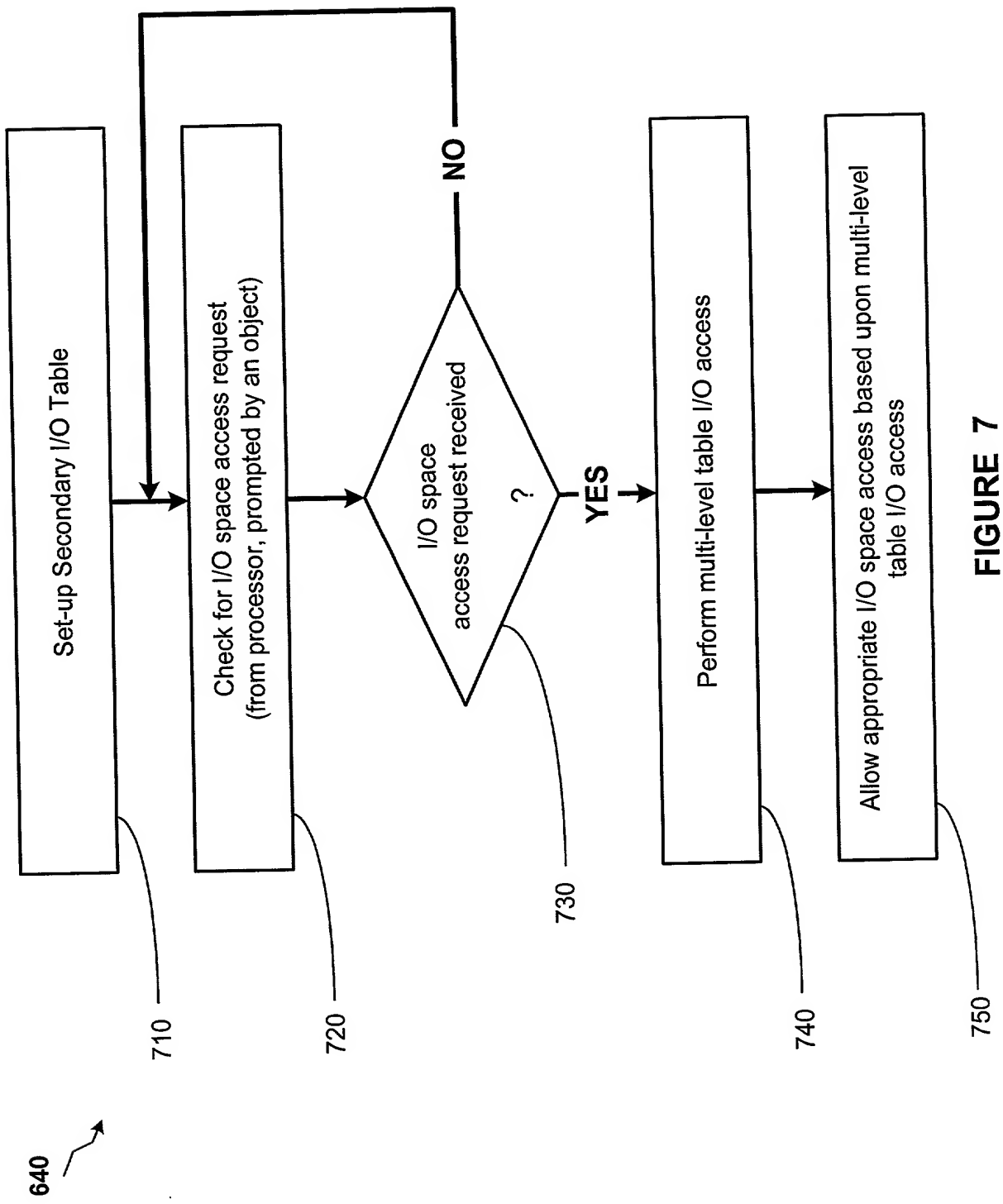
640
Set-up Secondary I/O Table
710
Check for I/O space access request (from processor, prompted by an object)
720
I/O space access request received ?
730
NO
YES
Perform multi-level table I/O access
740
Allow appropriate I/O space access based upon multi-level table I/O access
750

FIGURE 7

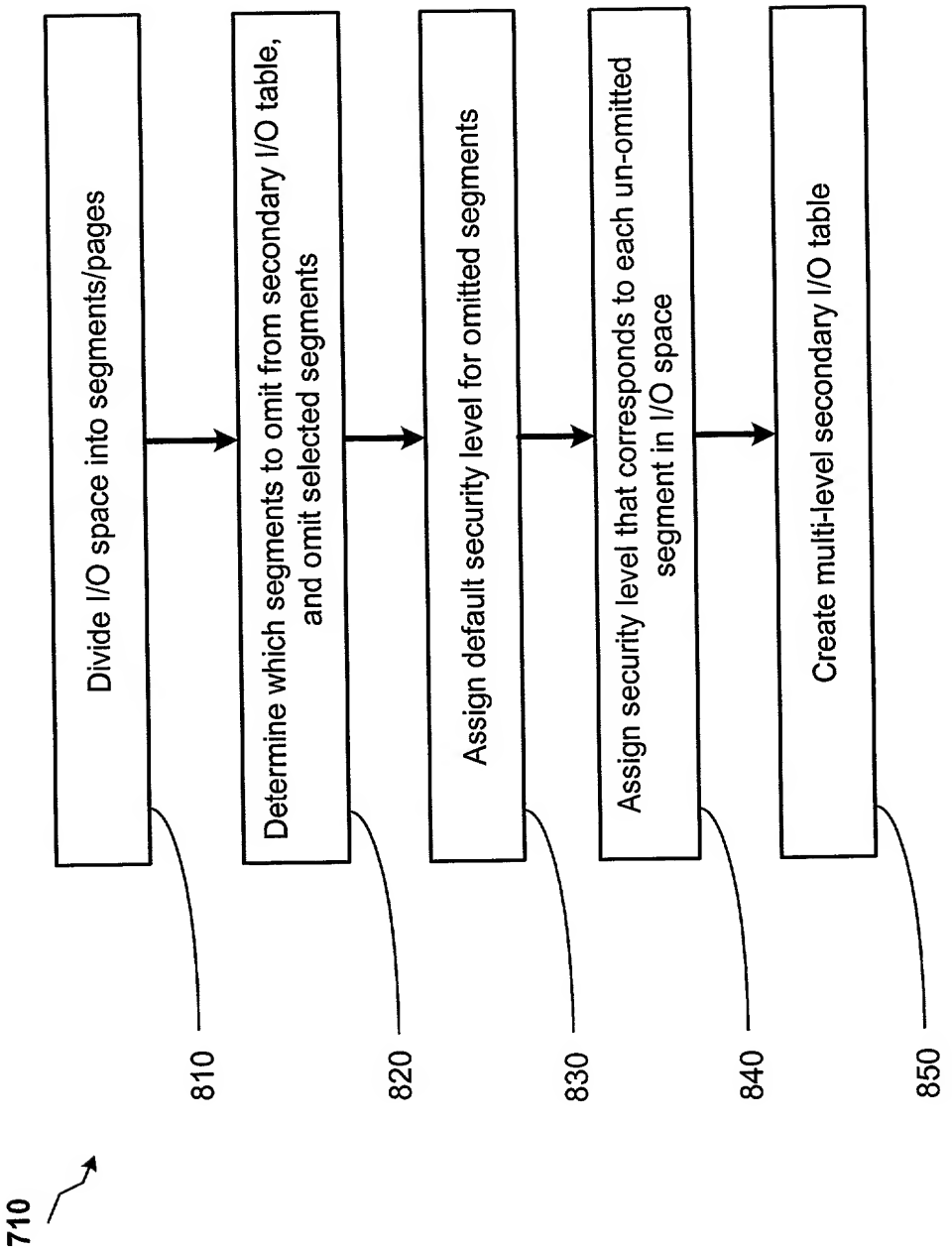
710
Divide I/O space into segments/pages
Determine which segments to omit from secondary I/O table, and omit selected segments
Assign default security level for omitted segments
Assign security level that corresponds to each un-omitted segment in I/O space
Create multi-level secondary I/O table
810
820
830
840
850

FIGURE 8

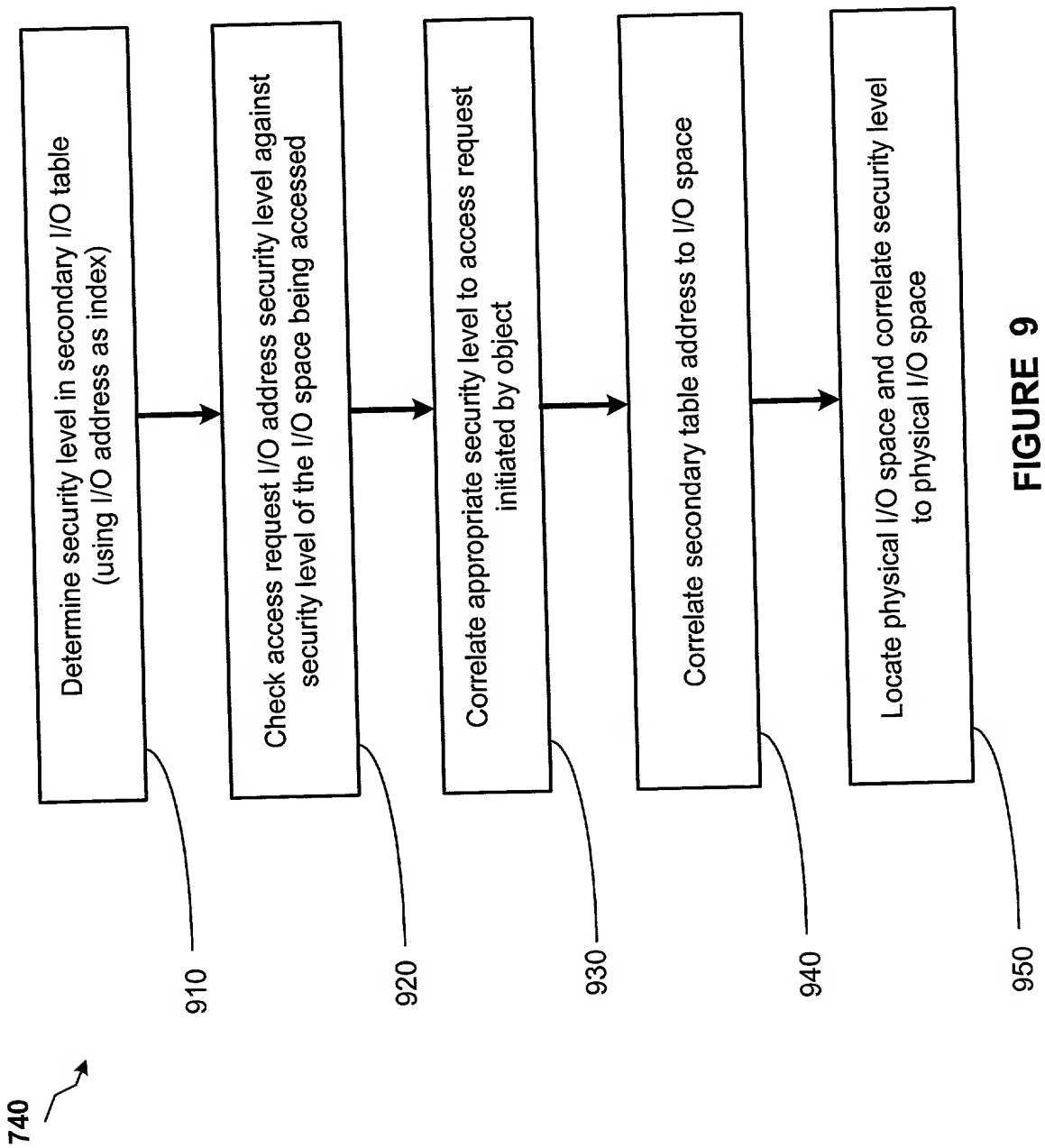
740
Determine security level in secondary I/O table (using I/O address as index)
910
Check access request I/O address security level against security level of the I/O space being accessed
920
Correlate appropriate security level to access request initiated by object
930
Correlate secondary table address to I/O space
940
Locate physical I/O space and correlate security level to physical I/O space
950

FIGURE 9

20070808074007

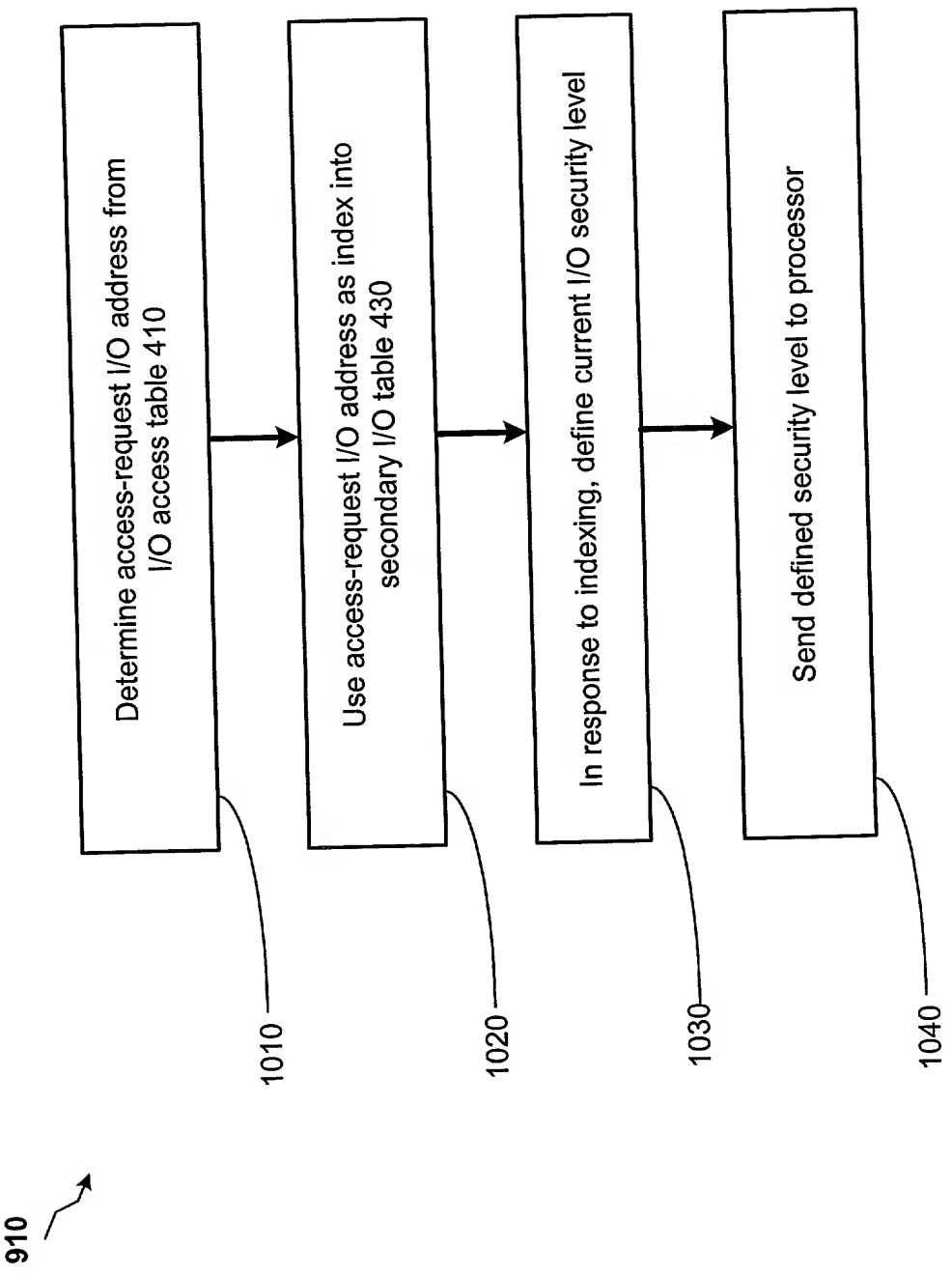

FIGURE 10

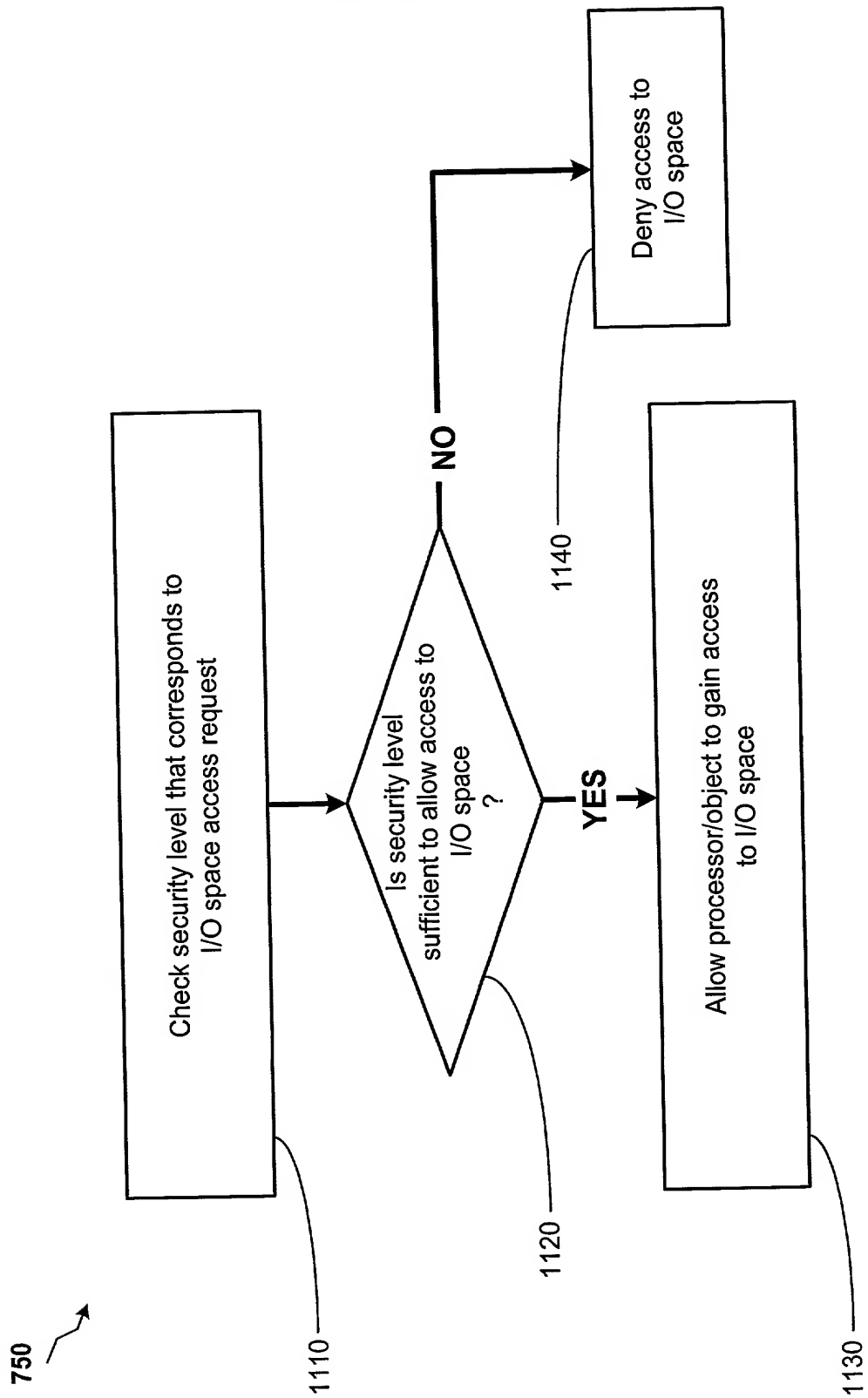
750
Check security level that corresponds to I/O space access request
1110
Is security level sufficient to allow access to I/O space ?
1120
NO
YES
Deny access to I/O space
1140
Allow processor/object to gain access to I/O space
1130

FIGURE 11